REPRESENTATION OF ALLOWED CLAIMS

(insert claim listing)

1. (Previously Amended) Ignition control circuitry including an integrated circuit die and comprising:

a first circuit responsive to a first control signal to produce a drive signal;

a resistor thermally coupled to said die and configured to receive a load current resulting from production of said drive signal, said resistor generating heat resulting from dissipating said load current;

a second circuit producing an output voltage proportional to a difference between an operating temperature of the die adjacent said resistor and a reference temperature of the die at a location spaced from said resistor; and

a third circuit responsive to said output voltage to disable said first control signal, and thereby disable said drive signal, if said output voltage exceeds a reference voltage.

2. (Original) The circuitry of claim 1 wherein said second circuit includes:

a differentially connected transistor pair including a first transistor positioned adjacent to said resistor such that an operating temperature of said first transistor is near that of said resistor, and a second transistor positioned remote from said resistor and having an operating temperature defining said reference temperature, said transistor pair producing an output signal proportional to a difference in operating temperatures of said first and second transistors; and

a fourth circuit operable to convert said output signal to said output voltage.

3. (Original) The circuitry of claim 2 wherein said first and second transistors are bipolar transistors, said first transistor defining a base electrically connected to a base of said second transistor and an emitter electrically connected to an emitter of said second transistor.

4. (Original) The circuitry of claim 3 wherein said first transistor defines a first collector receiving a first collector current from a first output of a current mirror;

and wherein said second transistor defines a second collector receiving a second collector current from a second output of said current mirror, said first and second collector currents each having magnitudes dependent upon said operating temperatures of respective ones of said first and second transistors;

and wherein said output signal is a difference current corresponding to a difference between said magnitudes of said first and second collector currents.

5. (Original) The circuitry of claim 2 wherein said second transistor is positioned relative to said resistor such that said operating temperature of said second transistor is unaffected for a period of time by heat generated by said resistor resulting from dissipating said load current.

6. (Original) The circuitry of claim 1 wherein said third circuit includes a comparator having a first input receiving said output voltage, a second output receiving a reference voltage and a comparator output, said comparator output switching from a first logic level to a second logic level when said output voltage exceeds said reference voltage.

7. (Original) The circuitry of claim 6 wherein said third circuit further includes a reference voltage circuit producing said reference voltage with a first magnitude when said comparator output produces said first logic level, and producing said reference voltage with a second lesser magnitude when said comparator output produces said second logic level to thereby provide said comparator with switching hysteresis.

8. (Canceled)

9. (Previously Amended) The circuitry of claim 21 wherein said third circuit further includes an AND gate having a first input receiving said second control signal, a second input connected to said latch output and an AND gate output providing said first control signal to a control signal input of said first circuit, said AND gate output disabling said first control signal to said input of said first circuit when said latch output produces said second state and otherwise passing said second control signal to said input of said first circuit.

10. (Original) The circuitry of claim 1 further including a power device having a control input receiving said drive signal, a load input electrically connected to an electrical load and a load output electrically connected to said resistor, said power device responsive to said drive signal to conduct said load current from said electrical load through said resistor.

11. (Original) The circuitry of claim 9 wherein said electrical load is an automotive ignition coil having one end electrically connected to a voltage source and an opposite end connected to said load input of said power device.

12. (Previously Amended) Ignition control circuitry including an integrated circuit die and comprising:

a first circuit responsive to a first control signal to produce a drive signal;

a resistor thermally coupled to said die and configured to receive a load current resulting from production of said drive signal, said resistor generating heat resulting from dissipating said load current;

a second circuit including a differentially connected transistor pair including a first transistor positioned adjacent to said resistor and a second transistor positioned remote from said resistor, said transistor pair producing an output signal proportional to a difference in operating temperatures of said die at respective locations of said first and second transistors; and

a third circuit responsive to said output signal to disable said first control signal, and thereby disable said drive signal, if a magnitude of said output signal exceeds a reference magnitude.

13. (Original) The circuitry of claim 12 wherein said first transistor is positioned adjacent to said resistor such that an operating temperature of said first transistor is near that of said resistor;

and wherein said second transistor is positioned relative to said resistor such that said operating temperature of said second transistor is unaffected for a period of time by heat generated by said resistor resulting from dissipating said load current.

14. (Original) The circuitry of claim 13 wherein said first and second transistors are bipolar transistors, said first transistor defining a base electrically connected to a base of said second transistor and an emitter electrically connected to an emitter of said second transistor.

15. (Original) The circuitry of claim 14 wherein said first transistor defines a first collector receiving a first collector current from a first output of a current mirror;

and wherein said second transistor defines a second collector receiving a second collector current from a second output of said current mirror, said first and second collector currents each having magnitudes dependent upon said operating temperatures of respective ones of said first and second transistors;

and wherein said output signal is a function of a difference current corresponding to a difference between said magnitudes of said first and second collector currents.

16. (Original) The circuitry of claim 12 wherein said third circuit includes a comparator having a first input receiving said output signal, a second input receiving a reference voltage having said reference magnitude and a comparator output, said comparator output switching from a first logic level to a second logic level when a voltage level of said output signal exceeds said reference voltage.

17. (Original) The circuitry of claim 16 wherein said third circuit further includes a reference voltage circuit producing said reference voltage with a first magnitude when said comparator output produces said first logic level, and producing said reference voltage with a second lesser magnitude when said comparator output produces said second logic level to thereby provide said comparator with switching hysteresis.

18. (Canceled)

19. (Previously Amended) The circuitry of claim 22 wherein said third circuit further includes an AND gate having a first input receiving said second control signal, a second input connected to said latch output and an AND gate output providing said first control signal to a control signal input of said first circuit, said AND gate output disabling said first control signal to said input of said first circuit when said latch output produces said second state and otherwise passing said second control signal to said input of said first circuit.

20. (Original) The circuitry of claim 12 further including a power device having a control input receiving said drive signal, a load input electrically connected to a powered automotive ignition coil and a load output electrically connected to said resistor, said power device responsive to said drive signal to conduct said load current from said ignition coil through said resistor.

21. (Original) Ignition control circuitry comprising:

a first circuit responsive to a first control signal to produce a drive signal;

a resistor configured to receive a load current resulting from production of said drive signal, said resistor generating heat resulting from dissipating said load current;

a second circuit producing an output voltage proportional to a difference between an operating temperature of said resistor and a reference temperature; and

a third circuit responsive to said output voltage to disable said first control signal, and thereby disable said drive signal, if said output voltage exceeds a reference voltage,

wherein said third circuit includes a comparator having a first input receiving said output voltage, a second output receiving a reference voltage and a comparator output, said comparator output switching from a first logic level to a second logic level when said output voltage exceeds said reference voltage, and

wherein said third circuit further includes a latch having a first input connected to said comparator output, a second input receiving an inverted representation of a second

control signal and a latch output, said latch output switching from a first state to a second state when said second control signal is at a predefined logic state and said comparator output switches from said first logic level to said second logic level.

22. (Original) Ignition control circuitry comprising:

a first circuit responsive to a first control signal to produce a drive signal;

a resistor configured to receive a load current resulting from production of said drive signal, said resistor generating heat resulting from dissipating said load current;

a differentially connected transistor pair including a first transistor positioned adjacent to said resistor and a second transistor positioned remote from said resistor, said transistor pair producing an output signal proportional to a difference in operating temperatures of said first and second transistors; and

a third circuit responsive to said output signal to disable said first control signal, and thereby disable said drive signal, if a magnitude of said output signal exceeds a reference magnitude,

wherein said third circuit includes a comparator having a first input receiving said output signal, a second input receiving a reference voltage having said reference magnitude and a comparator output, said comparator output switching from a first logic level to a second logic level when a voltage level of said output signal exceeds said reference voltage, and

wherein said third circuit further includes a latch having a first input connected to said comparator output, a second input receiving an inverted representation of a second control signal and a latch output, said latch output switching from a first state to a second state when said second control signal is at a predefined logic state and said comparator output switches from said first logic level to said second logic level.